

SECTION II

REGIONAL EMISSIONS ANALYSIS

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REGIONAL EMISSIONS ANALYSIS

BACKGROUND

SCAG is the primary agency responsible for the development and maintenance of travel demand forecasting models for the SCAG Region. SCAG has been developing and improving these travel demand forecasting models since 1967. The current Regional Transportation Modeling System has been calibrated and validated using the Year 2000 Post-Census Regional Travel Survey and the Year 2000 Census data. The validated model is described in the “2003 Model Validation & Summary – Regional Transportation Model”, published in May 2007.

The current SCAG Regional Transportation Model follows the standard four-step modeling structure: trip generation, trip distribution, mode choice, and network assignment. SCAG’s Model utilizes the TransCAD transportation modeling software and executes on computers located at SCAG. The on-road motor emissions for the 2011 FTIP were estimated using the EMFAC2007 emission model developed by the ARB.

SCAG affirms that the Regional Transportation Demand Model meets all the requirements of the Transportation Conformity Rule, specifically 40 CFR 93.122(b) (see Table 11 on page II-15). SCAG’s Modeling Task Force, consisting of modeling technical peers from the various county and state agencies and private firms, meets every other month at SCAG to discuss regionally significant modeling projects and modeling issues. These meetings are recorded digitally or on tape and stored at SCAG.

As required under EPA’s Transportation Conformity Rule, emissions analyses were performed for all budget and interim test years. Under the Transportation Conformity Rule, there are two types of regional emission tests for conformity findings: with SIP emission budgets (cited in section 93.118) and without SIP emission budgets (cited in section 93.119). The regional emission tests without a SIP emission budget are called interim emission tests. For the interim emissions tests, the build scenario’s emissions must be less than or equal to the no-build scenario’s emissions and/or the build scenario’s emissions must be less than or equal to the base year. Listed below is a description of the various network scenarios.

2008 RTP Conformity Base Year - the conformity base year for 8-hour ozone and PM_{2.5} is 2002; for all other pollutants the conformity base year is 1990.

2008 RTP No Build - the “No Build” scenario includes all existing regionally significant highway and transit projects, all ongoing TDM or TSM activities, and all projects which are undergoing right-of-way acquisition, are currently under construction, have completed the NEPA process, or are in the first year of previously conforming FTIP (2008).

2008 RTP Build - The “Build” scenario is generally defined as all RTP projects, including the 2008 RTP No Build, and the future transportation system that will result from full implementation of the 2008 FTIP and the 2008 RTP.

For more specific individual project information as part of the FTIP modeling and regional emissions analysis, refer to the list of modeled projects at the end of this section of the technical appendix.

REGIONAL TRAVEL DEMAND MODEL OVERVIEW

SCAG’s Regional Travel Demand Model follows a standard four step modeling approach. SCAG’s modeling methodologies, parameters, and inputs are periodically being updated to reflect current travel conditions and demographic changes. The Model is subject to periodic peer reviews to insure that the model is valid and represents the current state of the practice for transportation modeling. The Model was validated for the Year 2003, which is the base year for the 2008 RTP (note, this differs from the “conformity base year” previously described). Key modeling features are described below.

Modeling Area – The SCAG’s Regional Transportation Modeling area covers the entire SCAG region, including Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. For transportation analysis purposes, this modeling area is divided into 4,109 Transportation Analysis Zones (TAZ’s) with an additional 40 external cordon stations, 12 airport nodes, and 31 port nodes for the Port of Los Angeles and Port of Long Beach.

Highway Networks – The highway networks were initially developed from the Thomas Brothers GIS database and then updated with street inventory survey data. The networks include freeways for each direction coded as one-way links, freeway access/egress ramps, and freeway to freeway connectors (mixed flow and HOV where applicable). In addition, all highways/roads above the minor collector level are represented in the highway network.

Transit Networks – Transit networks were developed from the highway networks and therefore are consistent with the highway networks. For modeling purposes, transit services in the SCAG region are grouped into 13 transit modes to represent different transit operators and transit operating characteristics.

Trip Generation Models – Trip generation models were applied to nine different trip purposes (14 trip types): home-based work, home-based school, home-based college and university, home-based shopping, home-based social-recreational, home-based serving passenger, home-based other, work-based other, and non-home-based other trips. Home-based work trips were further split into six categories: direct low income, direct medium income, direct high income, strategic low income, strategic medium income, and strategic high income trips. “Direct” home-work trips are trips that go directly between home and work while “Strategic” home-work trips are trips that include at least one intermediate stop between home and work.

Trip Distribution Models - The Regional Model uses a gravity model approach to distribute trips. SCAG's trip distribution models are applied to the productions and attractions from trip generation models for each of the 14 trip types. The productions and attractions are split into two time periods (peak and off-peak) using the trips-in-motion factors. The distribution models are run for each trip type by each time period. This distribution process creates a total of 28 zone-to-zone person trip matrices, one for each trip type in the "peak" and "off peak" time periods.

Mode Choice Models – These consist of eight separate mode choice models for the trips of home-based work direct, home-based work strategic, home-based school, home-based shopping, home-based college and university, home-based other, work-based other, and other-to-other. These mode choice models are nested logit models with auto trips further split into drive alone, 2-person carpool, shared-ride of 3 or more people. Transit trips are further split into local bus, express bus, urban rail, and commuter rail, by access mode. Each model is applied for both the peak and off-peak periods. The travel modes outputs from the models also include school bus and non-motorized (walking or bicycling).

Heavy Duty Truck (HDT) Models – These consist of two major components: internal truck trip models and external truck trip models. The internal truck trips are generated using a cross-classification method by applying truck trip rates for a two-digit code by the North American Industry Classification System (NAICS) to the number of employees in that category and also the number of households within each zone. The daily truck trip ends are distributed using a gravity model to create daily truck trips for each of the three truck types: 1) light HDT, 2) medium HDT, and 3) heavy HDT. The external truck trips are developed using an econometric model to estimate inbound and outbound commodity flows by counties. The county to county commodity data is allocated to the zonal level based on NAICS employee distribution and then converted to truck trips using observed data collected during model development. Seaport and airport related truck trips were included as special generator truck trips. The daily truck trips by truck types are allocated to four time periods and merged with the auto trips in trip assignment.

Airport Passenger Trip Tables – Airport passenger trip tables were obtained from the RADAM Model, developed and maintained by consultants. RADAM estimated airport passenger trips at the RADAM zone level (about 100 zones) for two trip purposes: 1) business, and 2) non-business. These trips were then disaggregated to a Traffic Analysis Zone (TAZ) system of about 4,109 zones based on NAICS employment data for business trips and household data for non-business trips. The daily passenger vehicle trips were split into four time periods by three modes of travel: drive alone, 2-person carpool, and 3-or-more person carpools. The airport vehicle trips were merged with the other auto vehicle trips prior to network assignment.

Airport Air Cargo Trip Tables – These were also developed from the RADAM Model. The RADAM Model generated air cargo truck trips at the RADAM zones. These trips were then disaggregated to the TAZ based on NAICS employment data. The daily air cargo trips were

split into four time periods by three truck types: light HDT, medium HDT, and heavy HDT. The air cargo trips were merged with the HDT truck trips prior to network assignment.

Time of Day Factors – These factors for allocating the daily auto trips to the four time periods (AM peak 6:00-9:00 am, midday 9:00 am-3:00pm, PM peak 3:00-7:00 pm, night 7:00pm-6:00 am) were developed using the Travel Survey data.

Network Assignments – Network assignments consist of a series of multi-class simultaneous equilibrium assignments for six classes of vehicles (drive alone, 2-person carpool, 3+ person carpool, light HDT, medium HDT, and heavy HDT) and for each of the four time of day periods. During this assignment process, trucks are converted to Passenger Car Equivalences (PCE) for each link based on 1) percentage of trucks, 2) percentage of grade, 3) length of the link, and 4) level of congestion (v/c ratios). Transit vehicles are also included in the highway assignment.

Convergence Process - A 5-loop model run was conducted for each model year and modeling scenario. The following provides a detailed description of the process:

- The trip generation, trip distribution, and the mode choice models were run using the initial speeds or the “observed speeds” coded on the input highway networks to develop the initial AM peak period and mid-day period trip tables.
- This set of initial trip tables for each time period and for each vehicle class was assigned to the corresponding highway networks. This process produced the first pass (loop) highway assignments and yielded model-estimated congested speeds for the highway networks.
- The congested speeds were then fed back into the trip generation, trip distribution, and mode choice models to produce a second set of congested speeds for the AM and mid-day highway networks. An averaging process was utilized to smooth the volume variation between the first pass (loop) of the trip assignment and the second pass of the trip assignment step. A new set of congested speeds was then created and fed back into trip generation, trip distribution, and mode choice models to produce a new set of trip tables for the third pass of trip assignment. This process was repeated one more time to produce a set of reasonably converged AM peak and mid-day networks (the 4th loop).
- The congested speeds were then fed back into the trip generation, trip distribution, and mode choice models to produce trip tables for the last loop trips assignments. The final assignment of trips was performed for all four time periods (AM, mid-day, PM, and night period).

Highway Performance Monitoring System (HPMS) Vehicle Miles Traveled (VMT) Factors - In order to maintain consistency of model results with HPMS VMT estimates, a set of base year HPMS VMT to model VMT ratios (factors) is developed for each subarea of county by air basin, based on the year 2003 model validation results. Separate factors were generated for autos and trucks. These same factors are applied to final network assignments of each model run to yield final network flows and congestion.

It is noted that for the San Bernardino County portion of the Western MDAB ozone non-attainment area (MDAB_SB), an HPMS adjustment was not made to the heavy-duty truck VMT after reviewing locally developed county-based data and per agreement among U.S. EPA, ARB, FHWA, and SCAG and additional interagency consultation as allowed for by the Federal Conformity Regulation Section 93.122(b)(3).

SCAG's Travel Demand Model used for the regional emissions analysis meets the federal modeling requirements reflected in Section 93.122 (Procedures for determining regional transportation related emissions) of the Transportation Conformity Regulations.

2011 FTIP MODELING ASSUMPTIONS

The following sub-sections list the key modeling assumptions for the 2011 FTIP.

Socio-Economic Data – Tables 1 and 2 show the population and employment summaries by county and air basin which reflect current trends. This forecast has been in development since 2005 under direction from SCAG's Regional Council Community, Economic and Human Development (CEHD) Policy Committee and in collaboration with SCAG's subregions and local jurisdictions. The process involved several major steps outlined as follows:

1. Analysis of regional growth trends and estimates from sources ranging from the U.S. Departments of Commerce, Health and Human Services, Bureau of Labor Statistics and Internal Revenue Service and the California Department of Finance and Employment Development Department.
2. Analysis of key assumptions (fertility rate, mortality rate, net immigration, labor force rates, headship rates, etc.) and methodologies (cohort-component and shift-share models).
3. Review and feedback by SCAG's Plans and Programs Technical Advisory Committee, a Panel of Forecasting Experts, counties, sub-regions and cities on numerous occasions including 15 sub-regional workshops and dozens of one-on-one meetings.
4. SCAG's Regional Council approved the 2008 RTP growth forecast on May 8, 2008.

TABLE 1 SUMMARY OF POPULATION DATA

County	Air Basin	2003	2010	2012	2014	2020	2023	2030	2035
IMPERIAL	SSAB	155,000	202,000	220,000	241,000	276,000	289,000	312,000	320,000
LOS ANGELES	SCAB	9,716,000	10,179,000	10,288,000	10,395,000	10,721,000	10,878,000	11,236,000	11,477,000
	MDAB	319,000	437,000	470,000	502,000	609,000	661,000	780,000	861,000
ORANGE	SCAB	2,999,000	3,315,000	3,370,000	3,424,000	3,534,000	3,565,000	3,630,000	3,654,000
RIVERSIDE	SCAB	1,352,000	1,734,000	1,808,000	1,881,000	2,095,000	2,195,000	2,413,000	2,549,000
	MDAB	35,000	39,000	40,000	41,000	47,000	49,000	54,000	58,000
	SSAB	361,000	470,000	502,000	534,000	667,000	733,000	877,000	989,000
SAN BERNARDINO	SCAB	1,446,000	1,611,000	1,653,000	1,684,000	1,818,000	1,877,000	2,011,000	2,102,000
	MDAB	418,000	571,000	611,000	640,000	765,000	821,000	946,000	1,031,000
VENTURA	SCCAB	797,000	861,000	877,000	898,000	937,000	956,000	996,000	1,014,000
SCAG REGION	SSAB	516,000	672,000	722,000	775,000	943,000	1,022,000	1,189,000	1,310,000
	SCAB	15,513,000	16,839,000	17,118,000	17,384,000	18,168,000	18,515,000	19,289,000	19,783,000
	MDAB	772,000	1,047,000	1,120,000	1,183,000	1,421,000	1,531,000	1,781,000	1,951,000
	SCCAB	797,000	861,000	877,000	898,000	937,000	956,000	996,000	1,014,000
	TOTAL	17,598,000	19,418,000	19,837,000	20,239,000	21,469,000	22,025,000	23,255,000	24,057,000

Rounded to nearest thousand

Source: SCAG 2008 RTP Growth Forecast, May 2008

TABLE 2 SUMMARY OF EMPLOYMENT DATA

County	Air Basin	2003	2010	2012	2014	2020	2023	2030	2035
IMPERIAL	SSAB	56,000	73,000	81,000	90,000	106,000	113,000	126,000	133,000
LOS ANGELES	SCAB	4,270,000	4,450,000	4,493,000	4,532,000	4,626,000	4,674,000	4,791,000	4,872,000
	MDAB	83,000	102,000	108,000	114,000	129,000	137,000	155,000	169,000
ORANGE	SCAB	1,567,000	1,755,000	1,788,000	1,821,000	1,897,000	1,919,000	1,961,000	1,982,000
RIVERSIDE	SCAB	433,000	588,000	629,000	670,000	797,000	859,000	1,005,000	1,098,000
	MDAB	7,000	9,000	10,000	10,000	12,000	12,000	14,000	15,000
	SSAB	148,000	187,000	196,000	205,000	233,000	246,000	276,000	301,000
SAN BERNARDINO	SCAB	522,000	642,000	667,000	691,000	751,000	785,000	870,000	954,000
	MDAB	117,000	168,000	178,000	189,000	215,000	229,000	265,000	301,000
VENTURA	SCCAB	335,000	373,000	382,000	391,000	417,000	428,000	450,000	463,000
SCAG REGION	SSAB	204,000	261,000	278,000	296,000	339,000	359,000	402,000	433,000
	SCAB	6,792,000	7,436,000	7,578,000	7,715,000	8,072,000	8,237,000	8,627,000	8,906,000
	MDAB	207,000	280,000	297,000	313,000	355,000	378,000	435,000	485,000
	SCCAB	335,000	373,000	382,000	391,000	417,000	428,000	450,000	463,000
	TOTAL	7,537,000	8,349,000	8,534,000	8,715,000	9,183,000	9,401,000	9,913,000	10,287,000

Rounded to nearest thousand
Source: SCAG 2008 RTP Growth Forecast, May 2008

Networks – A summary of the transportation system attributes for the highway and transit networks for Years 2003 to 2035 are shown in Tables 3, 4 and 5. Lane mile data includes freeway to freeway connectors. Other freeway ramps, freeway Type 3 lanes, and centroid connectors are not included. Note that values in the tables in this report may not add exactly due to rounding.

TABLE 3 SUMMARY OF 2011 FTIP HIGHWAY NETWORK LANE MILES

Network	Freeway/Toll	HOV	Arterials	Collectors	Total
SCAB					
2003	7,950	746	28,110	6,218	43,024
2010 No Build	8,112	897	28,460	6,270	43,739
2010	8,128	897	28,604	6,336	43,965
2012	8,236	863	28,853	6,422	44,374
2014	8,266	979	29,111	6,497	44,853
2020 No Build	8,404	1,008	28,721	6,358	44,491
2020	8,834	1,205	30,049	6,761	46,849
2030 No Build	8,457	1,017	28,704	6,359	44,537
2030	9,037	1,313	30,295	7,122	47,767
2035 No Build	8,459	1,017	28,704	6,359	44,539
2035	9,119	1,337	30,456	7,108	48,020
SCCAB					
2003	495	1	1,858	622	2,976
2010 No Build	513	1	1,892	614	3,020
2010	513	1	1,894	623	3,031
2012	521	1	1,899	623	3,044
2014	521	8	1,903	624	3,056
2020 No Build	523	1	1,896	613	3,033
2020	523	8	1,919	624	3,074
2030 No Build	524	1	1,896	613	3,034
2030	550	8	1,956	624	3,138
2035 No Build	524	1	1,896	613	3,034
2035	550	8	1,956	624	3,138

TABLE 3 CONTINUED

Network	Freeway/Toll	HOV	Arterials	Collectors	Total
MDAB					
2003	1,757	6	4,489	6,123	12,375
2010 Baseline	1,824	18	4,688	6,058	12,588
2010	1,829	18	4,821	6,002	12,670
2012	1,833	18	4,918	6,033	12,802
2014	1,833	18	5,057	6,043	12,951
2020 No Build	1,824	18	4,794	6,059	12,695
2020	2,081	72	5,993	5,969	14,115
2030 No Build	1,824	18	4,794	6,059	12,695
2030	2,081	75	6,131	5,933	14,220
2035 No Build	1,824	18	4,794	6,059	12,695
2035	2,115	75	6,154	5,913	14,257
SSAB (Coachella)					
2003	380 ¹	0	1,378 ¹	750	2,508
2010 No Build	380	0	1,381	757	2,518
2010	389	0	1,475	819	2,683
2012	389	0	1,560	849	2,798
2014	390	0	1,600	865	2,855
2020 No Build	389	0	1,406	763	2,558
2020	392	0	1,752	908	3,052
2030 No Build	389	0	1,406	763	2,558
2030	422	0	1,826	992	3,240
2035 No Build	389	0	1,406	763	2,558
2035	422	0	1,828	997	3,247

¹ Corrected miscoding of expressway as freeway.

TABLE 3 CONTINUED

Network	Freeway/Toll	HOV	Arterials	Collectors	Total
SSAB (Imperial)					
2003	373	0	991	2,374	3,738
2010 No Build	373	0	1,072	2,371	3,816
2010	373	0	1,107	2,362	3,842
2012	373	0	1,155	2,362	3,890
2014	373	0	1,155	2,362	3,890
2020 No Build	373	0	1,121	2,371	3,865
2020	373	0	1,168	2,364	3,905
2030 No Build	373	0	1,121	2,371	3,865
2030	412	0	1,178	2,357	3,947
2035 No Build	373	0	1,121	2,371	3,865
2035	412	0	1,185	2,354	3,951
Total SCAG Region					
2003	10,955 ²	752	36,826 ²	16,087	64,621
2010 No Build	11,202	916	37,493	16,070	65,681
2010	11,232	916	37,901	16,142	66,191
2012	11,352	882	38,385	16,289	66,908
2014	11,383	1,005	38,826	16,391	67,605
2020 No Build	11,513	1,027	37,938	16,164	66,642
2020	12,203	1,285	40,881	16,626	70,995
2030 No Build	11,567	1,036	37,921	16,165	66,689
2030	12,502	1,396	41,386	17,028	72,312
2035 No Build	11,569	1,036	37,921	16,165	66,691
2035	12,618	1,420	41,579	16,996	72,613

² Reflected the correction of miscoding of expressway as freeway in Coachella Valley.

TABLE 4 SUMMARY OF 2011 FTIP TRANSIT ROUTE MILES

Network	Local Bus¹	Express Bus	Rail	HSRT	Total
2008	19,732	4,098	1,842	0	25,672
2010 No Build	19,775	4,063	1,874	0	25,713
2010	19,880	4,127	1,899	0	25,906
2012	19,976	4,213	2,060	0	26,249
2014	20,044	4,261	2,090	0	26,395
2020 No Build	19,823	4,152	1,964	0	25,939
2020	20,156	4,323	2,227	277	26,983
2030 No Build	19,882	4,152	1,964	0	25,998
2030	20,301	4,738	2,499	277	27,814
2035 No Build	19,888	4,152	1,964	0	26,003
2035	20,301	4,738	2,541	277	27,857

¹ Includes MTA's Rapid Buses.

TABLE 5 SUMMARY OF 2011 FTIP TRANSIT SERVICE MILES

Network	Local Bus²	Express Bus	Rail	HSRT	Total
2008	690,680	86,792	33,746	0	811,218
2010 No Build	696,400	85,199	38,446	0	820,045
2010	705,640	89,624	41,332	0	836,596
2012	711,822	88,926	41,759	0	842,507
2014	720,690	91,799	44,147	0	856,636
2020 No Build	704,613	93,149	42,485	0	840,247
2020	730,545	100,147	62,115	10,690	903,497
2030 No Build	710,806	93,163	42,485	0	846,454
2030	738,901	108,441	66,935	10,694	924,970
2035 No Build	711,840	93,152	42,485	0	847,477
2035	740,197	108,495	72,352	10,694	931,738

² Includes MTA's Rapid Buses.

Work-at-home and Telecommuting – Home-Based-Work trips were reduced for Work-at-Home and Telecommuting in keeping with the trends observed since 1990 and 2000. In year 2000, Work-at-Home trips were 3.58% and Telecommute trips were 3.34% for a total Home-Based-Work trip reduction of 6.92%. Trip rates used in trip generation are based on the 2000 Travel Survey. Table 6 shows the total reductions to the home-based-work person trips over the 2000 base as applied in the trip generation model.

TABLE 6 TOTAL HOME-BASED-WORK PERSON TRIP REDUCTIONS

Category	2000	2003	2010	2014	2018	2020	2023	2030	2035
Work-at-Home	3.58%	3.89%	4.62%	5.03%	5.45%	5.65%	5.97%	6.69%	7.21%
Telecommute	3.34%	3.48%	3.84%	4.06%	4.29%	4.41%	4.60%	5.07%	5.43%
Total Trip Reductions	6.92%	7.37%	8.46%	9.09%	9.74%	10.06%	10.57%	11.76%	12.64%
Increase over 2000 Base	0	0.45%	1.54%	2.17%	2.82%	3.14%	3.65%	4.84%	5.72%

Auto Operating Cost – There are two components used in calculating auto operating cost: the cost of gasoline and “other” costs. The “other” costs category includes costs for repairs, light maintenance, lubrication, tires, and accessories. The assumption used in the modeling work is that if an auto is available at the household then the depreciation of the car and the insurance costs are already being paid for whether the car is left at home or used for commuting to work. Table 7 lists the auto operating costs used for 2008 RTP model runs. All costs are in 1999 constant dollars. Note: costs are expressed in 1999-dollar values for input into the mode choice models. Auto Operating costs are calculated using the following formula: Auto Operating Cost = Fuel Cost / Fuel Economy + Other Costs.

TABLE 7 AUTO OPERATING COSTS

Category	2003	2010	2014	2018	2020	2023	2030	2035
Auto Operating Cost *	13.762	16.519	17.178	17.604	17.764	17.852	18.047	18.179

* Cents/mile; year 1999 constant \$

Transit Fare – Transit fares are estimated based on a composite of the different fares charged for different categories and weighted appropriately. Fare estimation considers the following:

- Cash fares including the various discounts offered to students, the elderly, and the disabled.
- The use of monthly passes by various categories for the initial boarding and transferring between buses.
- The average effective express and rail zone charge for both cash and pass users.

Table 8 shows the transit fares utilized in the Regional Model. This assumes no real cost increase in transit fares from 2003 to 2035.

TABLE 8 TRANSIT FARES (IN 1999 DOLLAR VALUE)

Transit Mode	Description	Boarding Fare
10	Commuter Rail	\$2.96
11	MTA Local Bus	\$0.75
12	MTA Express Bus	\$0.75
13	Urban Rail (MTA Metrorail)	\$0.75
14	Los Angeles County Express Bus	\$1.03
15	Los Angeles County Local Bus (Group 1)	\$0.69
16	Los Angeles County Local Bus (Group 2)	\$0.40
17	Los Angeles County Local Bus (Group 3)	\$0.19
18	Los Angeles County Local Bus (Group 4)	\$0.00
19	All Other Local Bus	\$0.75
20	All Other Express Bus	\$0.75
22	MTA Rapid Bus	\$0.75

Non-Motorized Trips – Plan scenario (all years) assumes that there will be a shift of one percent of the motorized trips to non-motorized forms of travel (i.e., walking and bicycling) due to the Regional Transportation Plan’s investment in non-motorized facilities.

Capacity and Free Flow Speed – Table 9 shows highway capacities (including for heavy duty truck) used in the Model for each of the facility types vary, depending on area location (i.e., CBD, urban, suburban, rural, or mountain). Free flow speeds are based on posted speeds. A complete description of how the speeds/capacities were derived is contained in SCAG’s model validation report – “2003 Model Validation & Summary”.

TABLE 9 HIGHWAY CAPACITIES AND FREE FLOW SPEEDS USED IN THE MODEL

Facility Type	Vehicles / Lane / Hour	Free Flow Speed (mph)
Freeway (MF, HOV)	1,900 – 2,100	55 – 70
Principal Arterial	500 – 850	20 – 60
Other Arterial	450 – 800	20 – 55
Collector	400 – 750	20 – 55

Toll Roads – Table 10 displays the maximum toll costs applied for the four toll roads in the SCAG Region. All of the toll facilities are freeways and are located in Orange County. The toll facility on the SR-91 Freeway is approximately 10 miles long and is part of the Riverside Freeway, which consists of eight lanes of mixed flow and four lanes of toll roads (located in the center lanes of the freeway). The other three toll facilities were designed and built by private funding and require all vehicles to pay toll fees. The effect of the toll charges on the toll roads was incorporated into the highway assignment procedure. The toll charge was added to each toll facility by inserting the cost to the appropriate link and identifying the link with a unique Toll Class Number. Toll costs (in 1999 dollars) were converted to a time value (in minutes) in the network assignment step.

TABLE 10 MAXIMUM TOLL COSTS APPLIED

Corridor	Peak Period	Off Peak Period
SR-91, Riverside Freeway	\$2.75	\$0.82
SR-73, San Joaquin Hills	\$0.15/mile	\$0.075/mile
SR-241, Foothill	\$0.15/mile	\$0.075/mile
SR-261, Eastern	\$0.15/mile	\$0.075/mile

Intelligent Transportation Systems (ITS) – The speeds and capacities on Smart Streets were increased by 5% to reflect the improved traffic flow due to the ATT/IVHS.

Highway Assignments – Vehicle trip assignments yield traffic volumes and speeds on each link for the AM peak (6:00 a.m. – 9:00 a.m.), Midday (9:00 a.m. – 3:00 p.m.), PM peak (3:00 p.m. – 7:00 p.m.), and Night (7:00 p.m. – 6:00 a.m.) periods. For each time period, SCAG utilizes an equilibrium assignment algorithm to take into account congestion by employing a capacity-restrained iterative assignment process. Heavy-duty trucks are integrated into the assignment process by converting truck vehicle trips into PCE and then assigning them simultaneously with the light-duty vehicles.

This equilibrium assignment technique adjusts link time for each assignment iteration by using an Akcelik formation of volume-delay curve.

Conformity requirements – Table 11 is a summary of the conformity requirements related to travel demand model and how SCAG's regional travel demand model satisfies these requirements.

TABLE 11 CONFORMITY REQUIREMENTS RELATED TO TRAVEL DEMAND MODEL

CFR	Requirement	How Requirement is Satisfied
93.122(b)(1)(i)	Network-based travel models must be validated against observed counts (peak and off-peak, if possible) for a base year that is not more than 10 years prior to the date of the conformity determination. Model forecasts must be analyzed for reasonableness and compared to historical trends and other factors, and the results must be documented	The SCAG travel demand models were estimated and calibrated using data from SCAG's Year 2000 Post-Census Regional Travel Survey, the 2000 US Census, 2003 External Travel Survey, and various Transit on-board Surveys. The model was validated against 2003 ground counts and 2003 HPMS data.
93.122(b)(1)(ii)	Land use, population, employment, and other network-based travel model assumptions must be documented and based on the best available information.	All land use, population, households, employment, and network-based model assumptions were updated for 2008 RTP and documented in 2008 RTP Growth Forecast Report and this Conformity Report.
93.122(b)(1)(iii)	Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. The distribution of employment and residences for different transportation options must be reasonable.	Land development and use are consistent with future transportation systems. The distribution of employment, population, and household is reasonable with respect to the transportation systems.
93.122(b)(1)(iv)	A capacity-sensitive assignment methodology must be used, and emissions estimates must be based on a methodology which differentiates between peak and off-peak link volumes and speeds and uses speeds based on final assigned volumes.	The SCAG travel demand model includes separate multi-modal user equilibrium assignments for peak and off-peak time periods. The network assignments are capacity-sensitive. Link speeds are calculated based on final assigned volumes.
93.122(b)(1)(v)	Zone-to-zone travel impedances used to distribute trips between origin and destination pairs must be in reasonable agreement with the travel times that are estimated from final assigned traffic volumes. Where use of transit currently is anticipated to be a significant factor in satisfying transportation demand, these times should also be used for modeling mode splits.	The SCAG travel demand model includes full feedback of travel time among trip generation, trip distribution, mode choice, and trip assignment steps. Both highway and transit times are included in the mode choice model.
93.122(b)(1)(vi)	Network-based travel models must be reasonably sensitive to changes in the time(s), cost(s), and other factors affecting travel choices.	The SCAG travel demand model development included rigorous model estimation, calibration, validation, and sensitivity analysis of factors affecting travel choices such as travel time(s), cost(s), and others. The model is reasonably sensitive to changes in these factors.

FUTURE MODEL IMPROVEMENTS

Although significant improvements have been incorporated into the models used for the 2008 RTP modeling, SCAG continually refines and upgrades the Regional Transportation Model. Listed below are some of the current and upcoming model improvement projects:

- Updated Heavy-Duty Truck Model: SCAG is currently in the process of enhancing the Regional Heavy-Duty Truck Model. Work tasks include an extensive travel survey, an updated external trip estimation methodology, and a more accurate representation of warehouse related trips.
- Arterial Speed Study and Regional Screen-line Traffic Count Program: The results of these two studies will be used to validate the new Regional Transportation Model.

- **Regional Highway Inventory:** SCAG is performing an extensive survey and inventory of existing highways, the goods movement system, and transit facilities.
- **Integrated Land Use Transportation Model:** SCAG has completed the first draft version of the PECAS (Production, Exchange, Consumption Allocation System) integrated land use model, along with 2007-2008 parcel-based land use database. The draft model is under testing for various policy scenarios.
- **Activity Based Travel Demand Model:** The activity-based travel demand model will be developed in two phases. Phase 1 is to test if the model can reasonably reflect travel patterns for SCAG region. Phase 2 is to estimate model coefficients with SCAG travel survey data. The consultant team has completed phase 1 and is working on phase 2 development.
- **Year 2010 Post-Census Survey:** SCAG is working with Caltrans and other MPOs in California to conduct a Year 2010 Statewide Household Travel Survey. This travel survey will provide the necessary travel behavior inventory for developing an activity-based model for an update of existing trip-based travel model.

SUMMARY OF REGIONAL VEHICLE MILES TRAVELED

Table 12 shows the summaries of VMT in 1,000-mile increments by air basin. VMT data were produced from the SCAG Regional Travel Model and does not include VMT from school buses, urban buses, and motor homes (non-modeled). These non-modeled VMT were provided by the ARB and is included in the emissions section as OTH (Other) VMT.

TABLE 12 VMT SUMMARY (IN THOUSANDS)

AIR BASIN	L&MD	HD	TOTAL	L&MD	HD	TOTAL	L&MD	HD	TOTAL
	2003			2010 NO-BUILD			2010 PLAN		
SCCAB	17,414	18,952	1,340	18,941	1,341	20,282	18,861	1,339	20,200
SCAB	323,641	342,823	24,241	342,805	24,250	367,055	340,931	24,228	365,160
MDAB	24,915	35,636	6,331	35,587	6,332	41,919	35,437	6,323	41,760
SSAB	13,623	18,034	2,539	18,017	2,539	20,556	18,094	2,535	20,629
Total	379,592	415,445	34,451	415,351	34,462	449,812	413,324	34,425	447,749
	2012 PLAN			2014 PLAN					
SCCAB	19,224	1,382	20,606	19,510	1,420	20,930			
SCAB	345,672	25,046	370,718	350,038	25,791	375,829			
MDAB	37,085	6,726	43,811	38,489	7,108	45,596			
SSAB	18,107	2,676	20,783	19,637	2,819	22,456			
Total	420,089	35,829	455,918	427,674	37,137	464,811			
	2020 NO-BUILD			2020 PLAN					
SCCAB	20,504	1,549	22,053	20,364	1,552	21,915			
SCAB	369,956	28,383	398,339	370,424	28,324	398,748			
MDAB	43,676	8,349	52,024	44,905	8,363	53,268			
SSAB	26,574	3,177	29,751	26,502	3,174	29,676			
Total	460,710	41,458	502,168	462,195	41,413	503,607			
	2030 NO-BUILD			2030 PLAN					
SCCAB	21,587	1,714	23,302	21,570	1,723	23,293			
SCAB	393,743	31,958	425,702	395,844	31,798	427,642			
MDAB	53,266	10,113	63,378	54,913	10,148	65,061			
SSAB	34,299	3,697	37,996	34,326	3,682	38,008			
Total	502,895	47,483	550,378	506,654	47,351	554,005			
	2035 NO-BUILD			2035 PLAN					
SCCAB	21,972	1,787	23,759	21,942	1,797	23,739			
SCAB	403,975	33,644	437,619	406,976	33,457	440,434			
MDAB	58,579	10,998	69,577	60,478	11,001	71,479			
SSAB	38,074	3,928	42,002	38,124	3,930	42,054			
Total	522,600	50,357	572,957	527,520	50,185	577,705			

DRAFT 2011 FTIP REGIONAL EMISSIONS ANALYSIS

SCAG's Draft 2011 FTIP is consistent with the most recent estimate of mobile source emissions. The conformity analysis is based on the population, employment, travel, and congestion estimates by SCAG as the MPO. The on-road motor emissions estimates for the Draft 2011 FTIP were analyzed using the EMFAC2007 emission model developed by ARB. For paved road dust, SCAG uses the approved South Coast AQMD methodology, which uses AP-42 for the Base Year and a combination of additional growth in center-line miles and VMT for future years.

REQUIRED REGIONAL EMISSIONS TESTS FOR 2011 FTIP

The required regional emissions tests for the 2011 FTIP are presented in Table 13. Since transportation conformity findings are needed out to the RTP's horizon year (i.e., 2035), the latest budget years deemed adequate by U.S EPA serve as the budgets for future years in each emission test.

TABLE 13 REQUIRED REGIONAL EMISSIONS TEST FOR 2011 FTP

Year	8-hr Ozone	PM2.5	PM10	CO	NO2
2010	VEN, WMD, IMP	IMP	SC, CV, MD *, IMP *	SC	SC
2011	SC**				
2012	CV	SC			
2014	SC				
2015				SC **	
2017	SC**				
2020	SC, VEN, WMD, IMP, CV	SC, IMP	SC, CV, MD *, IMP *	SC	SC
2030	SC, VEN, WMD, IMP, CV	SC, IMP	SC, CV, MD *, IMP *	SC	SC
2035	SC, VEN, WMD, IMP, CV	SC, IMP	SC, CV, MD *, IMP *	SC	SC

SC = South Coast Air Basin (SCAB);

CV = Coachella Valley (SSAB);

VEN = Ventura County (SCCAB);

WMD = Western Mojave (Antelope/Victor Valleys);

MD = Mojave Desert (San Bernardino Portion and Searles Valley portions);

IMP = Imperial County (SSAB);

* Build/No-Build test (all other are budget tests);

** Interpolated per conformity rule.

SUMMARY OF REGIONAL EMISSIONS ANALYSIS

The following tables summarize the required regional emission analyses for each of the non-attainment areas within SCAG's jurisdiction. For those areas which require budget tests, the FTIP emissions values in the summary tables utilize the rounding convention used by ARB to set the budgets (i.e., any fraction rounded up

to the nearest ton), and are the basis of the conformity findings for these areas. Details of the analyses in the summary tables are provided in the two subsections that follow.

SOUTH CENTRAL COAST AIR BASIN – VENTURA COUNTY PORTION

TABLE 14 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant		2010	2020	2030	2035
ROG	Budget	13	13	13	13
	Plan	11	7	6	5
Budget - Plan		2	6	7	8
NOx	Budget	19	19	19	19
	Plan	17	9	6	6
Budget - Plan		2	10	13	13

SOUTH COAST AIR BASIN

TABLE 15 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant		2011 ¹	2014	2017 ²	2020	2030	2035
ROG	Budget	176	150	131	116	116	116
	Plan	166	141	125	110	84	76
Budget - Plan		10	9	6	6	32	40
NOx	Budget	354	287	232	190	190	190
	Plan	326	258	210	162	120	112
Budget - Plan		28	29	22	28	70	78

¹ 2011 interpolated between 2010 and 2012.

² 2017 interpolated between 2014 and 2020.

TABLE 16 PM2.5 (ANNUAL EMISSIONS [TONS/DAY])

Pollutant		2012	2020	2030	2035
ROG	Budget	163	163	163	163
	Plan	154	107	81	73
Budget - Plan		9	56	82	90
NOx	Budget	337	337	337	337
	Plan	309	176	122	114
Budget - Plan		28	161	215	223
PM2.5	Budget	38	38	38	38
	Plan	36	36	37	38
Budget - Plan		2	2	1	0

TABLE 17 PM10 (ANNUAL EMISSIONS [TONS/DAY])

Pollutant		2010	2020	2030	2035
ROG	Budget	251	251	251	251
	Plan	171	107	81	73
Budget - Plan		80	144	170	178
NOx	Budget	549	549	549	549
	Plan	371	176	122	114
Budget - Plan		178	373	427	435
PM10	Budget	166	166	166	166
	Plan	156	153	152	155
Budget - Plan		10	13	14	11

TABLE 18 CO (WINTER EMISSIONS [TONS/DAY])

Pollutant		2010	2015 ¹	2020	2030	2035
CO	Budget	2,137	2,137	2,137	2,137	2,137
	Plan	1,659	1,222	910	624	569
Budget - Plan		478	915	1,227	1,513	1,568

¹ 2015 interpolated between 2014 and 2020.

TABLE 19 NO2 (WINTER EMISSIONS [TONS/DAY])

Pollutant		2010	2020	2030	2035
NO2	Budget	680	680	680	680
	Plan	397	187	129	119
Budget - Plan		283	493	551	561

Note: The motor vehicle emissions budgets in the nitrogen dioxide (NO2) maintenance plan portion of the 2007 South Coast SIP, as submitted by the California Air Resource Board (CARB) on May 1, 2009, were found adequate by EPA on November 29, 2009

WESTERN MOJAVE DESERT AIR BASIN – ANTELOPE VALLEY PORTION OF LOS ANGELES COUNTY AND SAN BERNARDINO COUNTY PORTION OF MDAB EXCLUDING SEARLES VALLEY

TABLE 20 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant		2010	2020	2030	2035
ROG	Budget	22	22	22	22
	Plan	20	12	10	10
Budget - Plan		2	10	12	12
NOx	Budget	77	77	77	77
	Plan	74	33	26	27
Budget - Plan		3	44	51	50

MOJAVE DESERT AIR BASIN – SAN BERNARDINO COUNTY PORTION

TABLE 21 PM10 (ANNUAL EMISSIONS [TONS/DAY])

		2010	2020	2030	2035
PM10	No Build	9.4	8.6	9.5	10.3
	Build	8.2	7.9	9.0	9.8
Budget - Plan		1.1	0.7	0.5	0.5

MOJAVE DESERT AIR BASIN – SEARLES VALLEY PORTION

TABLE 22 PM10 (ANNUAL EMISSIONS [TONS/DAY])

		2010	2020	2030	2035
PM10	No Build	0.1	0.1	0.1	0.1
	Build	0.1	0.1	0.1	0.1
No Build - Build		0.0	0.0	0.0	0.0

SALTON SEA AIR BASIN – COACHELLA VALLEY PORTION

TABLE 23 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant		2012	2020	2030	2035
ROG	Budget	7	7	7	7
	Plan	7	5	4	4
Budget - Plan		0	2	3	3
NOx	Budget	26	26	26	26
	Plan	25	14	11	12
Budget - Plan		1	12	15	14

TABLE 24 PM10 (ANNUAL EMISSIONS [TONS/DAY])

		2010	2020	2030	2035
PM10	Budget *	10.9	10.9	10.9	10.9
	Plan	8.5	8.0	8.2	8.6
Budget - Plan		2.4	2.9	2.7	2.3

Note: budget set to one decimal place by 2003 Coachella SIP.

SALTON SEA AIR BASIN – IMPERIAL COUNTY PORTION

TABLE 25 OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])¹

Pollutant		2010	2020	2030	2035
ROG	Budget	7	7	7	7
	Plan	6	5	4	5
Budget - Plan		1	2	3	2
NOx	Budget	17	17	17	17
	Plan	16	10	9	10
Budget - Plan		1	7	8	7

TABLE 26 ¹ PM2.5 (ANNUAL EMISSIONS [TONS/DAY])

Pollutant		2010	2020	2030	2035
PM2.5	No Build	1.1	1.3	1.6	1.7
	Build	1.1	1.3	1.5	1.6
No Build - Build		0.0	0.0	0.1	0.1

Note: 2006 PM2.5 area designation effective December 14, 2009.

¹ The conformity re-determination for the 2006 PM2.5 NAAQS is required by December 14, 2010. The PM2.5 emission analysis has been performed for the conformity re-determination. This table is included here for information purposes until FHWA/FTA has approved the conformity re-determination.

TABLE 27 PM10 (ANNUAL EMISSIONS [TONS/DAY])

Pollutant		2010	2020	2030	2035
PM10	No Build	4.2	6.5	8.0	8.6
	Build	4.1	6.3	7.6	8.2
No Build - Build		0.1	0.2	0.4	0.4

DETAILED EMISSIONS ANALYSES

The following tables present further detail for those non-attainment areas within SCAG's jurisdiction where the emissions analyses include additional line items beside the RTP model run and the emission budgets (e.g., baseline adjustments, state strategy reductions, re-entrained road dust, etc.).

SOUTH CENTRAL COAST AIR BASIN – VENTURA COUNTY PORTION

TABLE 28 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant	2010	2020	2030	2035
ROG				
2011 FTIP	10.7	6.9	5.1	4.5
Baseline Adjustment *	0.0	0.0	0.0	0.0
Total Emissions	10.7	6.9	5.1	4.5
Emission Budget	13	13	13	13
Budget – Plan	2.3	6.1	7.9	8.5
NOx				
2011 FTIP	16.7	8.1	5.5	5.1
Baseline Adjustment *	0.0	0.0	0.0	0.0
Total Emissions	16.7	8.1	5.5	5.1
Emission Budget	19	19	19	19
Budget – Plan	2.3	10.9	13.5	13.9

* Provided by ARB.

SOUTH COAST AIR BASIN

TABLE 29 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant	2011	2014	2017	2020	2030	2035
ROG 2011 FTIP	165.6	141.1	125.7	110.3	83.7	75.8
Baseline Adjustments *	-0.4	-0.7	-1.0	-1.2	0.0	0.0
Total Emissions	165.2	140.4	124.7	109.1	83.7	75.8
Emission Budget	176	150	131	116	116	116
Budget – Plan	10.8	9.6	6.3	6.9	32.3	40.2
NOx 2011 FTIP	339.6	270.5	221.4	172.3	119.9	111.8
Baseline Adjustments *	-14.3	-13.4	-12.0	-10.4	0.0	0.0
Total Emissions	325.3	257.1	209.4	161.9	119.9	111.8
Emission Budget	354	287	232	190	190	190
Budget – Plan	28.7	29.9	22.6	28.1	70.1	78.2

* Provided by ARB.

TABLE 30 PM2.5 (ANNUAL EMISSIONS [TONS/DAY])

Pollutant	2012	2020	2030	2035
ROG				
2011 FTIP	154.0	106.2	80.3	72.9
Baseline Adjustment *	-0.5	0.0	0.0	0.0
Total Emissions	153.5	106.2	80.3	72.9
Emission Budget	163	163	163	163
Budget – Plan	9.5	56.8	82.7	90.1
NOx				
2011 FTIP	322.1	175.6	121.6	113.1
Baseline Adjustment *	-14.0	0.0	0.0	0.0
Total Emissions	308.1	175.6	121.6	113.1
Emission Budget*	337	337	337	337
Budget – Plan	28.9	161.4	215.4	223.9
PM2.5				
2011 FTIP	15.7	14.6	14.7	15.2
Re-entrained Road Dust Paved	18.7	19.5	20.2	20.6
Re-entrained Road Dust Unpaved **	1.0	1.0	1.0	1.0
Road Construction Dust **	0.2	0.2	0.3	0.3
Baseline Adjustment *	-0.2	0.0	0.0	0.0
Total Emissions	35.4	35.3	36.2	37.1
Emission Budget*	38	38	38	38
Budget – Plan	2.6	2.7	1.8	0.9

* Provided by ARB.

** Provided by SCAQMD based on SCAG input.

TABLE 31 PM10 (ANNUAL [TONS/DAY])

Pollutant	2010	2020	2030	2035
ROG <i>2011 FTIP</i>	170.0	106.2	80.3	72.9
Emission Budget	251	251	251	251
Budget – Plan	81.0	144.8	170.7	178.1
NOx <i>2011 FTIP</i>	370.5	175.6	121.6	113.1
Emission Budget	549	549	549	549
Budget – Plan	178.5	373.4	427.4	435.9
PM10 <i>2011 FTIP</i>	22.8	21.7	22.3	23.1
<i>Re entrained Road Dust Paved</i>	122.0	129.4	133.9	136.6
<i>Re entrained Road Dust Unpaved *</i>	8.7	8.7	8.7	8.7
<i>Road Construction Dust *</i>	2.2	2.2	2.2	2.2
<i>AQMD Backstop **</i>	0.0	-9.0	-16.0	-16.0
Total Emissions	155.6	153.0	151.1	154.6
Emission Budget	166	166	166	166
Budget – Plan	10.4	13.0	14.9	11.4

* Provided by SCAQMD based on SCAG input.

** AQMP Backstop Measure: There is projected long-term growth in direct PM10 emissions due to increased vehicle travel on paved and unpaved roads. To address this increase in primary PM10 emissions from travel while continuing to provide for attainment after 2006, the 2003 AQMP included the "Transportation Conformity Budget Backstop Control Measure" which commits to achieve additional PM10 reductions from transportation-related PM10 source categories in future years to offset the increased emissions.

WESTERN MOJAVE DESERT AIR BASIN – ANTELOPE VALLEY PORTION OF LOS ANGELES COUNTY AND SAN BERNARDINO COUNTY PORTION OF MDAB EXCLUDING SEARLES VALLEY

TABLE 32 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant	2010	2020	2030	2035
ROG				
2011 FTIP	19.3	11.1	9.3	9.2
Baseline Adjustment *	0.0	0.0	0.0	0.0
Total Emissions	19.3	11.1	9.3	9.2
Emission Budget	22	22	22	22
Budget – Plan	2.7	10.9	12.7	12.8
NOx				
2011 FTIP	81.4	73.4	32.9	26.0
Baseline Adjustment *	-4.6	0.0	0.0	0.0
Total Emissions	76.8	73.4	32.9	26.0
Emission Budget	77	77	77	77
Budget – Plan	0.2	3.6	44.1	51.0

* Provided by ARB.

MOJAVE DESERT AIR BASIN – SAN BERNARDINO COUNTY PORTION

TABLE 33 PM10 (ANNUAL EMISSIONS [TONS/DAY])

	2010	2020	2030	2035
2011 FTIP No-Build				
Re-entrained Road Dust	4.5	5.5	6.5	7.1
Motor Vehicle	4.9	3.2	3.0	3.2
Total Emissions	9.4	8.7	9.6	10.3
2011 FTIP Build				
Re-entrained Road Dust	4.6	5.5	6.4	6.9
Paving Unpaved Roads	-1.1	-0.6	-0.4	-0.3
Motor Vehicle	4.9	3.2	3.1	3.3
Total Emissions	8.4	8.0	9.0	9.9
No Build - Build	1.1	0.7	0.5	0.5

SALTON SEA AIR BASIN – COACHELLA VALLEY PORTION

TABLE 34 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant	2012	2020	2030	2035
ROG				
2011 FTIP	6.3	4.5	3.8	3.7
Baseline Adjustment *	0.0	0.0	0.0	0.0
Total Emissions	6.3	4.5	3.8	3.7
Emission Budget	7	7	7	7
Budget – Plan	0.7	2.5	3.2	3.3
NOx				
2011 FTIP	26.6	13.3	10.7	11.1
Baseline Adjustment *	-2.0	0.0	0.0	0.0
Total Emissions	24.6	13.3	10.7	11.1
Emission Budget	26	26	26	26
Budget – Plan	1.4	12.7	15.3	14.9

* Provided by ARB.

TABLE 35 PM10 (ANNUAL [TONS/DAY])

	2010	2020	2030	2035
2011 FTIP	1.7	1.3	1.3	1.5
Re-entrained Road Dust Paved	3.0	3.4	3.9	4.2
Re-entrained Road Dust Unpaved *	3.7	3.3	2.8	2.8
Road Construction Dust *	0.1	0.1	0.1	0.1
Total Emissions	8.5	8.0	8.2	8.6
Emission Budget	10.9	10.9	10.9	10.9
Budget – Plan	2.4	2.9	2.7	2.3

* Provided by SCAQMD based on SCAG input.

SALTON SEA AIR BASIN – IMPERIAL COUNTY PORTION

TABLE 36 8-HOUR OZONE (SUMMER PLANNING EMISSIONS [TONS/DAY])

Pollutant	2010	2020	2030	2035
ROG				
2011 FTIP	5.7	4.1	4.0	4.1
Baseline Adjustment *	0.0	0.0	0.0	0.0
Total Emissions	5.7	4.1	4.0	4.1
Emission Budget	7	7	7	7
Budget – Plan	1.3	2.9	3.0	2.9
NOx				
2011 FTIP	15.9	9.1	8.6	9.1
Baseline Adjustment *	0.0	0.0	0.0	0.0
Total Emissions	15.9	9.1	8.6	9.1
Emission Budget	17	17	17	17
Budget - Plan	1.1	7.9	8.4	7.9

* Provided by ARB.

TABLE 37 PM2.5 (ANNUAL [TONS/DAY])¹

	2010	2020	2030	2035
2011 FTIP No-Build				
Re-entrained Road Dust	0.5	0.9	1.1	1.2
Motor Vehicle	0.5	0.4	0.5	0.5
Total Emissions	1.1	1.3	1.6	1.7
2011 FTIP Build				
Re-entrained Road Dust	0.5	0.9	1.0	1.1
Motor Vehicle	0.5	0.4	0.5	0.5
Total Emissions	1.1	1.3	1.5	1.6
Difference (No Build – Build)	0.0	0.0	0.1	0.1

¹ The conformity re-determination for the 2006 PM2.5 NAAQS is required to be federally approved by December 14, 2010. The documentation for the PM2.5 conformity re-determination is scheduled to be brought to the SCAG Regional Council for adoption in July 2010. The Imperial County PM2.5 emission analysis is included here for information until FHWA/FTA has approved the conformity re-determination.

TABLE 38 PM10 (ANNUAL [TONS/DAY])

	2010	2020	2030	2035
2011 FTIP No-Build				
<i>Re-entrained Road Dust</i>	3.5	5.8	7.3	7.8
<i>Motor Vehicle</i>	0.7	0.7	0.7	0.8
Total Emissions	4.2	6.5	8.0	8.6
2011 FTIP Build				
<i>Re-entrained Road Dust</i>	3.4	5.7	6.9	7.4
<i>Motor Vehicle</i>	0.7	0.7	0.7	0.8
Total Emissions	4.1	6.3	7.6	8.2
Difference (No Build – Build)	0.1	0.1	0.4	0.4

EMISSIONS BY VEHICLE CLASS

The following tables present detailed emissions information, by year and by vehicle class, for each of the non-attainment areas within SCAG's jurisdiction.

Table notes: HDT = heavy duty truck; L&M = light and medium duty vehicle; Other = school bus, urban bus and motor home; VMT = 1,000 miles; Emissions = tons per day

SOUTH CENTRAL COAST AIR BASIN – VENTURA COUNTY PORTION

TABLE 39 8-HOUR OZONE (SUMMER [TONS/DAY])

Year	Vehicle Class	ROG	NO _x	Year	Vehicle Class	ROG	NO _x
2010	L&M	9.5	7.6	2020	L&M	6.1	3.5
	HDT	1.1	8.6		HDT	0.7	4.2
	Other	0.1	0.6		Other	0.0	0.4
	Total	10.7	16.7		Total	6.9	8.1
2030	L&M	4.5	2.0	2035	L&M	3.9	1.6
	HDT	0.6	3.2		HDT	0.6	3.3
	Other	0.0	0.3		Other	0.0	0.3
	Total	5.1	5.5		Total	4.5	5.1

SOUTH COAST AIR BASIN

TABLE 40 8-HOUR OZONE, NO₂, CO, PM₁₀, PM_{2.5}

Year	Vehicle Class	ROG Summer	ROG Annual	NO _x Summer	NO _x Annual	NO ₂ Winter	CO Winter	PM ₁₀ Annual	PM _{2.5} Annual
2003	L&M	268.7	266.9	260.6	273.4	299.0	2600.6	13.1	7.9
	HDT	43.3	45.9	267.1	268.7	286.0	409.6	10.0	8.7
	Other	3.0	3.1	24.8	25.0	26.9	58.9	0.5	0.4
	Total	315.0	315.9	552.4	567.1	611.9	3069.1	23.6	17.1
2010	L&M	145.0	140.5	127.3	133.5	145.3	1415.3	14.2	8.8
	HDT	26.5	27.6	215.7	216.5	229.5	212.0	8.1	6.8
	Other	2.0	2.0	20.4	20.5	22.0	30.9	0.5	0.4
	Total	173.5	170.0	363.3	370.5	396.8	1658.2	22.8	16.0
2012	L&M	N/A	127.6	N/A	115.1	N/A	N/A	N/A	9.3
	HDT	N/A	24.5	N/A	187.5	N/A	N/A	N/A	6.0
	Other	N/A	1.8	N/A	19.5	N/A	N/A	N/A	0.4
	Total	N/A	154.0	N/A	322.1	N/A	N/A	N/A	15.7
2014	L&M	N/A	114.1	N/A	98.5	N/A	N/A	N/A	9.6
	HDT	N/A	21.5	N/A	159.1	N/A	N/A	N/A	5.2
	Other	N/A	1.7	N/A	18.3	N/A	N/A	N/A	0.4
	Total	N/A	137.3	N/A	275.8	N/A	N/A	N/A	15.2
2020	L&M	94.0	89.4	59.2	62.1	67.5	785.5	16.7	10.7
	HDT	15.0	15.5	98.3	98.7	103.3	110.3	4.5	3.5
	Other	1.3	1.3	14.7	14.9	15.9	13.9	0.5	0.4
	Total	110.3	106.2	172.3	175.6	186.7	909.6	21.7	14.6
2030	L&M	71.5	67.7	35.1	36.6	39.9	535.1	18.1	11.7
	HDT	11.3	11.7	73.1	73.2	75.7	79.0	3.8	2.6
	Other	0.9	0.9	11.7	11.8	12.6	9.4	0.5	0.4
	Total	83.7	80.3	119.9	121.6	128.2	623.5	22.3	14.7
2035	L&M	64.2	60.9	29.1	30.3	33.1	483.6	18.8	12.2
	HDT	10.9	11.2	73.9	74.0	76.3	76.8	3.9	2.7
	Other	0.7	0.8	8.7	8.8	9.4	7.6	0.4	0.3
	Total	75.8	72.9	111.8	113.1	118.8	568.0	23.1	15.2

WESTERN MOJAVE DESERT AIR BASIN – ANTELOPE VALLEY PORTION OF LOS ANGELES COUNTY AND SAN BERNARDINO COUNTY PORTION OF MDAB EXCLUDING SEARLES VALLEY

TABLE 41 8-HOUR OZONE (SUMMER)

Year	Vehicle Class	ROG	NO _x	Year	Vehicle Class	ROG	NO _x
2010	L&M	14.7	15.0	2020	L&M	8.8	7.1
	HDT	4.4	57.3		HDT	2.2	24.9
	Other	0.1	1.2		Other	0.1	0.9
	Total	19.3	73.4		Total	11.1	32.9
2030	L&M	7.5	4.8	2035	L&M	7.2	4.3
	HDT	1.8	20.4		HDT	1.9	22.1
	Other	0.1	0.8		Other	0.1	0.6
	Total	9.3	26.0		Total	9.2	26.9

MOJAVE DESERT AIR BASIN – SAN BERNARDINO COUNTY PORTION

TABLE 42 PM10 (ANNUAL)

Network	Vehicle Class	PM10	Network	Vehicle Class	PM10
2010 No-Build	L&M	0.9	2010 Build	L&M	0.9
	HDT	4.0		HDT	3.9
	Other	0.0		Other	0.0
	Total	4.9		Total	4.9
2020 No-Build	L&M	1.1	2020 Build	L&M	1.1
	HDT	2.0		HDT	2.1
	Other	0.0		Other	0.0
	Total	3.2		Total	3.2
2030 No-Build	L&M	1.3	2030 Build	L&M	1.4
	HDT	1.6		HDT	1.7
	Other	0.0		Other	0.0
	Total	3.0		Total	3.1
2035 No-Build	L&M	1.5	2035 Build	L&M	1.5
	HDT	1.7		HDT	1.7
	Other	0.0		Other	0.0
	Total	3.2		Total	3.3

MOJAVE DESERT AIR BASIN – SEARLES VALLEY

The Searles Valley planning area is designated as a PM10 federal non-attainment area. There are no proposed projects or programs in the 2008 RTP for transportation improvements in the Searles Valley area. Therefore, there are no differences between the 2008 RTP Plan and No-Build scenarios.

TABLE 43 PM10 (ANNUAL)

Network	Vehicle Class	PM10	Network	Vehicle Class	PM10
2010	L&M	0.03	2020	L&M	0.04
	HDT	0.08		HDT	0.03
	Other	0.00		Other	0.00
	Total	0.11		Total	0.07
2030	L&M	0.04	2035	L&M	0.05
	HDT	0.01		HDT	0.01
	Other	0.00		Other	0.00
	Total	0.06		Total	0.06

SALTON SEA AIR BASIN – COACHELLA VALLEY**TABLE 44 8-HOUR OZONE, PM10**

Year	Vehicle Class	ROG (summer)	NOX (summer)	PM10 (annual)	Year	Vehicle Class	ROG (summer)	NOX (summer)	PM10 (annual)
2010	L&M	5.0	4.4	0.5	2012	L&M	4.5	3.6	N/A
	HDT	2.0	26.6	1.2		HDT	1.7	22.5	N/A
	Other	0.1	0.5	0.0		Other	0.1	0.5	N/A
	Total	7.1	31.5	1.7		Total	6.3	26.6	N/A
2020	L&M	3.5	2.3	0.6	2030	L&M	3.0	1.7	0.9
	HDT	0.9	10.7	0.6		HDT	0.8	8.8	0.5
	Other	0.0	0.4	0.0		Other	0.0	0.3	0.0
	Total	4.5	13.3	1.3		Total	3.8	10.7	1.3
2035	L&M	2.9	1.6	1.0					
	HDT	0.8	9.4	0.5					
	Other	0.0	0.2	0.0					
	Total	3.7	11.2	1.5					

SALTON SEA AIR BASIN – IMPERIAL COUNTY

TABLE 45 8-HOUR OZONE; PM10; PM2.5 ¹

Year	Vehicle Class	ROG (summer)	NOX (summer)	PM10 (annual)	PM2.5 (annual)	Year	Vehicle Class	ROG (summer)	NOX (summer)	PM10 (annual)	PM2.5 (annual)
2010	L&M	4.7	4.7	0.2	0.1	2020	L&M	3.6	3.9	0.4	0.2
	HDT	1.0	11.0	0.5	0.4		HDT	0.5	5.0	0.3	0.2
	Other	0.1	0.2	0.0	0.0		Other	0.0	0.2	0.0	0.0
	Total	5.7	15.9	0.7	0.5		Total	4.1	9.1	0.7	0.4
2030	L&M	3.5	3.6	0.5	0.3	2035	L&M	3.6	3.6	0.5	0.3
	HDT	0.4	5.0	0.2	0.2		HDT	0.5	5.4	0.2	0.2
	Other	0.0	0.1	0.0	0.0		Other	0.0	0.1	0.0	0.0
	Total	4.0	8.6	0.7	0.5		Total	4.1	9.1	0.8	0.5

Note: The PM10 and PM2.5 emissions by vehicle class are equal for Build and No Build scenarios.

¹ The 2008 RTP and 2011 FTIP conformity re-determination for the 2006 PM2.5 NAAQS is required to be federally approved by December 14, 2010. The documentation for the PM2.5 conformity re-determination is scheduled to be brought to the SCAG Regional Council for adoption in July 2010. The Imperial County PM2.5 emission analysis is included here for information until FHWA/FTA has approved the conformity re-determination

LISTING OF MODELED PROJECTS IN 2011 FTIP

The 2011 FTIP modeled projects are included in this section and are organized by county in order of state highway, local highway and transit projects. The listings provide the following information:

- County
- System
- Lead Agency
- Project Number
- Project Description
- Completion Date
- Modeling Network
- State highway projects reflect the route and post miles

For other project information, refer to Volume III of the 2011 FTIP and locate the project by the project number.

IMPERIAL COUNTY

Modeled Projects

LOS ANGELES COUNTY

Modeled Projects

ORANGE COUNTY

Modeled Projects

SAN BERNARDINO COUNTY

Modeled Projects

RIVERSIDE COUNTY

Modeled Projects

VENTURA COUNTY

Modeled Projects